

WHAT IS CLAIMED IS:

1. A laser scanning microscope, comprising:
 - a light source, in particular a laser light source, defining a light beam,
 - 5 • an interruption device (1) for the light beam (2),
 - and means (3) for monitoring the functioning of the interruption device (1) being associated with the interruption device (1) wherein the means (3) are configured to monitor the interruption state generated by the interruption device (1).
- 10 2. The laser scanning microscope as defined in Claim 1, wherein an optical and/or acoustic indication is provided for indicating the position of the interruption device (1) in or out of the light beam (2).
- 15 3. The laser scanning microscope as defined in Claim 1, wherein the means (3) for monitoring have a light barrier and the interruption device (1) has an opening (4) formed therein
- 20 4. The laser scanning microscope as defined in Claim 1 wherein the means for monitoring have an electrical switch, preferably an interrupter contact.
5. The laser scanning microscope as defined in Claim 1, wherein the means for monitoring have an analysis unit with which at least one safety device is activatable.
- 25 6. The laser scanning microscope as defined in Claim 5, wherein a signal is transmittable to the light source and/or to a further interruption device by the analysis unit and/or the safety device.

7. The laser scanning microscope as defined in Claim 6, wherein a delay device is provided in terms of activation of the safety device and/or transmission of the signal.

5 8. The laser scanning microscope as defined in Claim 6, wherein an indication of a malfunction of the interruption device and/or of an activation of the safety device is provided.

9. The laser scanning microscope as defined in Claim 1, wherein the interruption device (1) has a mechanical shutter (5).
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10. The laser scanning microscope as defined in Claim 1, wherein the interruption device (1) has at least two movable components (6, 7) which are configured and arranged so that the mechanical momentum generated by at least one moving component (6) is compensated for by the motion of the at least another component (7).
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11. The laser scanning microscope as defined in Claim 10, wherein the components (6, 7) have the same mass.
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12. The laser scanning microscope as defined in Claims 10, wherein at least one component is a counterweight.

13. A shutter (5), used in an optical system, comprising:
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- a light beam (2) of a laser light source, and
- at least two movable components (6, 7) being configured and arranged so that the mechanical momentum generated by at least one moving component (6) is compensated for by the motion of at least another component (7).

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14. The shutter (5) as defined in Claim 13, wherein the components (6, 7) are of identical or mirror-symmetrical configuration.

15. The shutter (5) as defined in Claim 13, wherein the components (6, 7) have the same mass.

16. The shutter (5) as defined in Claim 13, wherein at least one component is a counterweight.

17. The shutter (5) as defined in Claim 13, wherein the components (6, 7) are arranged for straight-line and/or rotational motion.

18. The shutter (5) as defined in Claim 13, wherein the components (6, 7) are arranged for oppositely directed motion.

19. The shutter (5) as defined in Claim 13, wherein at least one component (6, 7) is configured as a barrier or rocker.

20. The shutter (5) as defined in Claim 19, wherein two barriers or rockers are provided.

21. The shutter (5) as defined in Claim 13, wherein at least one component (6, 7) has an opening (8) for the light beam (2).

22. The shutter (5) as defined in Claim 13, wherein the components (6, 7) are movable by a motion device which converts an electrical signal into a mechanical motion.

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23. The shutter (5) as defined in Claim 22, wherein the motion device has an electromagnet (9).
24. The shutter (5) as defined in Claim 13, wherein means (3) for monitoring the interruption state of the light beam (2) generated by the shutter (5) are associated with the shutter (5).
25. The shutter (5) as defined in Claim 13, wherein an optical and/or acoustic indication is provided for indicating the position of the interruption device (1) in or out of the light beam (2).